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SIGN LANGUAGE AMONG THE AMERICAN INDIANS

Introduction to the Study of Sign-Language among the North American Indians, as Illustrating the Gesture-Speech of Mankind. By Garrick Mallery. (Washington : Government Printing Office, 1880.)

UNDER this modest title another of those valuable contributions, which we owe to the Smithsonian Institution, has been made to science. Researches into the ethnography of the North American Indians have been going on for the last eleven years under the superintendence of Mr. J. W. Powell, and a series of compact and beautifully-printed monographs has lately been started for the purpose of aiding and directing them. The monograph just issued forms the second of the series hitherto published, and in spite of its title is full of new and interesting matter. It will be appreciated not only by those who are actually engaged in observing the life and manners of barbarous tribes, but also by every student of language and anthropology.

The evidence that has been accumulating for some time past makes it probable that the most important part of language, its grammatical machinery, originated in gestures and signs. These were the means whereby sense and meaning were imported into spoken words. As Col. Mallery remarks : "A child employs intelligent gestures long in advance of speech, although very early and persistent attempts are made to give it instruction in the latter but none in the former; it learns language only through the medium of signs; and long after familiarity with speech, consults the gestures and facial expressions of its parents and nurses as if to translate or explain their words." An examination of the sign-language or languages of mankind consequently becomes of high importance, and it is strange that no thorough and scientific attempt to undertake it has hitherto been made. Leibnitz indeed, with the instinct of genius, pointed out the need and importance of such an investigation (in his "*Collectanea Etymologica*," ch. 9), but his words met with no response. It is therefore all the more satisfactory to find that the subject has at last been taken up in America, where special opportunities still exist for collecting materials, notwithstanding the rapid decrease in the native population that seems to have been going on of late years. North America has always been the country where a language of signs was pre-eminently in vogue. Col. Mallery says with justice that "the words of an Indian tongue, being synthetic or undifferentiated parts of speech, are in this respect strictly analogous to the gesture elements which enter into a sign-language." Just as a single idea or mental picture is represented by a connected group of individual gestures, so too it is expressed in the polysynthetic speech of the Red Indian by a group of individual syllables which form but one word.

The first question we have to ask ourselves is whether sign-languages are the same all over the world, whether each idea or group of ideas has a fixed and natural gesture or sign corresponding to it everywhere. To this

question the researches made among the American Indians furnish a conclusive reply. "The alleged existence of one universal and absolute sign-language is, in its terms of general assertion, one of the many popular errors prevailing about our aborigines." Many signs are purely conventional, while many ideas or objects may be denoted by more than one sign. The signs used by the different Indian tribes to indicate the same ideas by no means agree together, nor do they always agree, so far as I know, with the signs employed for the same ideas in the Old World, whether by savages or by deaf-mutes. The curious language of signs employed in monasteries where the rule of silence was strictly observed, which is given by Leibnitz, if compared with the lists of signs furnished by American explorers, is a good example of the fact.

At the same time no signs can be so arbitrary and conventional as spoken words, nor can an idea be expressed by so many different signs as it can be by different sounds. Col. Mallery observes that "further evidence of the unconscious survival of gesture-language is afforded by the ready and involuntary response made in signs to signs when a man with the speech and habits of civilisation is brought into close contact with Indians or deaf-mutes. Without having ever seen or made one of their signs, he will soon not only catch the meaning of theirs, but produce his own, which they will likewise comprehend, the power seemingly remaining latent in him until called forth by necessity. The signs used by uninstructed congenital deaf-mutes and the facial expressions and gestures of the congenitally blind also present considerations under the heads of 'heredity' and 'atavism,' of some weight when the subjects are descended from and dwell among people who had disused gestures for generations, but of less consequence in cases such as that mentioned by Cardinal Wiseman of an Italian blind man who, curiously enough, used the precise signs made by his neighbours."

But care must be taken to distinguish between two things which are frequently confused together. Gestures and signs are wholly different, gestures being natural signs more or less conventional. A gesticulation is a gesture which has become a sign, and the nearer signs approach to gesticulations the more readily and instinctively they will be understood.

Those who wish to know what the Indian sign-language is will find plenty of interesting and suggestive examples in Col. Mallery's *Introduction*. He has added a list of his authorities as well as a speech in signs addressed by a medicine-man of the Wichitas to Mr. A. J. Holt, and a story in signs told by Natsches, the Pah-Ute chief, to Dr. W. J. Hoffman. These curious specimens of sign-language will show what it is more effectually than any description could do, and will justify the analysis and classification of the signs proposed by Col. Mallery.

In conclusion, aid and suggestions are asked from all interested in the subject, or who are in actual contact with savage and barbarous tribes. A list of words is appended for which the corresponding signs are wanted, those of chief importance being marked by an asterisk. We hope that the ethnographical department of the Smithsonian Institution will meet with all the assistance in this undertaking to which it is entitled. There must be many observers among the uncivilised races of the Old World

or in schools for deaf-mutes who have many facts of interest and value to contribute. It is only when these facts have all been gathered in that it will be possible to reconstruct that primitive speech of mankind which preceded articulate utterance, which formed the bridge to spoken language and expressed the earliest thought of the human race.

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TESTING TELEGRAPH LINES

Instructions for Testing Telegraph Lines and the Technical Arrangement of Offices. By Louis Schwendler. Vol. ii. Second Edition. (London: Trübner and Co., 1880.)

THE second volume of this useful work is free from the defects which disfigured the first volume, and which we were bound to find fault with (*NATURE*, vol. xix. p. 192). This is doubtless due to the watchful eye and careful hand of Prof. M'Leod, who has nursed it through the press and added some useful notes. It contains a very full and clear description of Mr. Schwendler's modification of the tangent galvanometer, by which quantitative electrical measurements of batteries, lines, and apparatus are more rapidly though more roughly made than with bridges and coils. Such an instrument is very extensively employed in England and America, but Mr. Schwendler has certainly improved its efficiency by combining certain resistances with it and making it more portable. It is remarkable what a handy and useful instrument this becomes, and what a valuable help it is to the telegraph engineer. Mr. Preece mentioned at the Society of Telegraph Engineers the other evening that it frequently happened over the extensive system of the Post Office—120,000 miles of wire and 12,000 instruments—that the daily bill of health showed not one single fault existing, and this he attributed principally to that accurate system of testing which has been in use in England for nearly twenty years. Mr. Varley introduced this system in England and in America also, where it is very extensively employed. It is a pity that Mr. Schwendler has not made himself better acquainted with the systems in use in other countries, for the perusal of his book leaves the impression that he thinks he has inaugurated a new system in India, whereas he has only modified existing systems to suit the requirements of the Indian service. Again this desire to be individual is shown by the adoption of that most unnecessary nomenclature of unit current, the "Oersted." Unit current is now universally known as the "Weber," and though some confusion has occurred as to whether unit current should be "webers per second," or simply "weber," nevertheless "webers" and that useful sub-multiple "milliwebers" are now used all over the world, except in India. Custom only has forced the terms *volt*, *ohm*, *farad*, *weber* into use. He would be a bold man who would attempt to convert "Ohm" into "Schwend," yet Mr. Schwendler would convert "Weber" into "Oersted." There is no doubt that Mr. Latimer Clark, who is the author of the recognised nomenclature, proposed the term "weber" for unit quantity, but as any term applied to unit quantity, excepting that based on unit capacity or "farad," is not wanted, and unit current is unit quantity per unit time, "webers per second" has rapidly, by the silent linguistic

process of abbreviation, subsided into "webers," and webers it will remain. This strange habit of ignoring existing terms is shown in the definition of "intensity" (p. 40) as applied to a battery which is said to be the maximum current which a battery produces on short circuit. Now there is scarcely an English-speaking country where this property is not known as "quantity," though this term is carefully excluded from all books from its eminently unscientific character. Nevertheless it is so rooted in telegraphic circles that there is scarcely a line-man in all England that does not use it. Again, those currents which every one knows as "earth currents" are called in India "natural currents" (p. 53). Moreover we have the strange anomaly that sometimes the author uses *Siemen's units*, sometimes *ohms*, sometimes *S.U.*, and sometimes *B.A.U.*, to designate units of resistance.

The battery used in India is the Minotto form of Daniell—a very wasteful cell, and giving for line purposes an internal resistance of 30 ohms! In dry climates where the circuits are long such a battery may be useful, but in damp climates, like England, where the circuits are comparatively short, such a battery is impossible. The Minotto cell is, however, very constant in its electro-motive force; and Mr. Schwendler's instructions for its maintenance are very clear and complete.

The principal portion of the book is devoted to a description and mode of construction and examination of the instruments in use in India and their connections. Mr. Schwendler has introduced a useful test called the "range test," by which those currents are recorded between which the instrument will work without any readjustment. Thus the range test of a Siemen's relay is 25. In other words, whether the current used be .001 or .025 weber, or any current of intermediate strength, the relay will equally work. An instrument that will stand such a test must be quite free from friction in its points or from residual magnetism in its iron core. The working currents in India never exceed 8 milliwebers nor fall below 2 milliwebers. Hence if a relay fulfil the above test it never wants adjustment. This is certainly "a consummation devoutly to be wished" by all telegraphists.

We observe the following interesting instruction: "On no account are relays to be exposed to the direct rays of an Indian sun. The permanent magnet is sure to lose its magnetism perceptibly, and consequently the relay will become unsensitive." Is this due to the light or to the heat of the sun? His notions of the efficiency of lightning protectors are rather heterodox. "All," says he (p. 195), "that can be said of them at present is, that if they are kept clean they do no harm;" yet he gives a very clear description of those in use. He attributes to Steinheil, in 1846, the first lightning discharger; but Highton, on the London and North-Western Railway, before this, rapt the wire for eight inches on each side of the instrument in bulbous paper and surrounded it with a mass of metallic filings placed in a tin lined box in connection with the earth.

Very excellent descriptions are given of different forms of relays and of various plans devised for reducing the effects of induction, notably Mr. W. P. Johnston's electro-magnetic shunt. Indeed the work is an admirable description of telegraphy in India, and it is one which should be in every electrician's library. There are